

APR 14 2008

Application No.: 10/517,465

Docket No.: TAW-011USRCE

AMENDMENTS TO THE CLAIMS

1. (currently amended) An actuator, comprising a resilient shape memory member with superelasticity, a magnetic body, and a magnetic field generator, said magnetic field generator being fixed to said resilient shape memory member, such that one of said magnetic body and said magnetic field generator is stationary while the other is movable, whereby said movable member is moved by a magnetic field provided from said magnetic field generator, wherein said magnetic body is attached to an end of said resilient shape memory member, and wherein at least part of said resilient shape memory member is covered with said magnetic body.

2 - 4. (canceled)

5. (withdrawn) An actuator, comprising a pair of ring-shaped magnetic bodies, a movable member disposed between said magnetic bodies movably in an axial direction, a magnetic field generator provided in said movable member, a pair of resilient shape memory members each disposed between said movable member and each magnetic body, a frame for supporting said magnetic bodies, and a shaft fixed to said movable member, extending through center bores of the magnetic bodies and slidably supported by both ends of said frame, said magnetic field generator being energized to generate a magnetic attractive or repulsive force between the magnetic field generator and the magnetic bodies to move the movable member.

6. (withdrawn) An actuator, comprising a pair of magnetic field generators, a pair of movable members each including one of said pair of magnetic field generators, a magnetic body disposed between said movable members in a moving direction, a resilient shape memory member disposed between said movable members, a shaft for fixing said magnetic body and slidably supporting said movable members, a frame for fixing said shaft, and output rods fixed to each movable member and slidably supported by said frame, said magnetic field generators being energized to generate a magnetic attractive or repulsive force between said magnetic field generators and said magnetic body to move said movable members.

7. (withdrawn) The actuator according to claim 6, wherein said frame comprises a stopper disposed relative to said magnetic body to regulate a movable range of said movable member.

Application No.: 10/517,465

Docket No.: TAW-011USRCE

8. (withdrawn) An actuator, comprising a pair of magnetic field generators, a movable member disposed between said magnetic field generators movably in an axial direction, a ring-shaped magnetic body provided in said movable member, a pair of resilient shape memory members each disposed between said movable member and each magnetic field generator, a frame for supporting said magnetic field generators, and a shaft fixed to said movable member and slidably supported by both ends of said frame, said magnetic field generators being energized to generate a magnetic attractive or repulsive force between said magnetic field generators and said magnetic body to move said movable member.
9. (withdrawn) The actuator according to claim 8, wherein said frame comprises a stopper disposed relative to said magnetic field generator to regulate a movable range of said movable member.
10. (withdrawn) An actuator, comprising a pair of ring-shaped magnetic bodies, a pair of movable members each including one of said pair of magnetic bodies, a magnetic field generator disposed between said movable members in a moving direction, a pair of resilient shape memory members each disposed between said magnetic field generator and each magnetic body, a frame for supporting said magnetic field generator, and a shaft fixed to each movable member, extending through a center bore of said magnetic body and slidably supported by an end of said frame, said magnetic field generator being energized to generate a magnetic attractive or repulsive force between said magnetic field generator and said magnetic bodies to move said movable members.
11. (withdrawn) An actuator, comprising a pair of ring-shaped magnetic bodies, a pair of movable members each including one of said pair of magnetic bodies, a magnetic field generator disposed between said movable members in their moving direction, a resilient shape memory member disposed between said movable members, a shaft for fixing said magnetic field generator and slidably supporting said movable members, a frame for fixing said shaft, and output rods fixed to each movable member and slidably supported by said frame, said magnetic field generator being energized to generate a magnetic attractive or repulsive force between said magnetic field generator and said magnetic bodies to move said movable members.

Application No.: 10/517,465

Docket No.: TAW-011USRCE

12. (withdrawn) The actuator according to claim 11, wherein said frame comprises a stopper to regulate a movable range of said movable member.

13. (withdrawn) The actuator according to claim 8, wherein said movable member comprises a support member for fixing said magnetic body, said support member comprising a large-diameter portion for supporting said magnetic body, a flange on an end of said large-diameter portion, and an external thread portion, onto which a cylindrical nut is screwed, said external thread portion having a groove, into which an end portion of said resilient shape memory member is inserted, said groove having such depth that the end portion of the inserted resilient shape memory member slightly protrudes from said groove of said external thread portion, and the end portion of the inserted resilient shape memory member being firmly fixed to said support member by screwing said nut onto said external thread portion.

14. (canceled)

15. (withdrawn) The actuator according to claim 13, wherein said external thread portion and said nut are complementarily tapered.

16. (canceled)

17. (canceled)

18. (withdrawn) The actuator according to claim 5, wherein said frame comprises a stopper disposed relative to said magnetic body to regulate a movable range of said movable member.

19. (withdrawn) The actuator according to claim 10, wherein said frame comprises a stopper to regulate a movable range of said movable member.

20. (withdrawn) The actuator according to claim 10, wherein said movable member comprises a support member for fixing said magnetic body, said support member comprising a large-

Application No.: 10/517,465

Docket No.: TAW-011USRCE

diameter portion for supporting said magnetic body, a flange on an end of said large-diameter portion, and an external thread portion, onto which a cylindrical nut is screwed, said external thread portion having a groove, into which an end portion of said resilient shape memory member is inserted, said groove having such depth that the end portion of the inserted resilient shape memory member slightly protrudes from said groove of said external thread portion, and the end portion of the inserted resilient shape memory member being firmly fixed to said support member by screwing said nut onto said external thread portion.

21. (withdrawn) The actuator according to claim 20, wherein said external thread portion and said nut are complementarily tapered.

22. (withdrawn) The actuator according to claim 11, wherein said movable member comprises a support member for fixing said magnetic body, said support member comprising a large-diameter portion for supporting said magnetic body, a flange on an end of said large-diameter portion, and an external thread portion, onto which a cylindrical nut is screwed, said external thread portion having a groove, into which an end portion of said resilient shape memory member is inserted, said groove having such depth that the end portion of the inserted resilient shape memory member slightly protrudes from said groove of said external thread portion, and the end portion of the inserted resilient shape memory member being firmly fixed to said support member by screwing said nut onto said external thread portion.

23. (withdrawn) The actuator according to claim 22, wherein said external thread portion and said nut are complementarily tapered.